# Angus Maddison and development economics


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# Angus Maddison and Development Economics

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**Abstract**

*This paper was prepared for the Angus Maddison Memorial conference, held in November 2010 at the International Institute of Social History in Amsterdam. The paper reflects on Angus Maddison's contributions to development economics. It focuses on the following issues: 1. quantification in development economics and the framework of proximate and ultimate causality in growth and development; 2 the debate about levels of GDP per capita in the middle of the eighteenth century; 3 Maddison versus the Malthusians; 4 measurement of Chinese Economic Performance in the long run; 5. the impact of Western expansion on the non-Western world and 6. the role of institutions in economic development.*

Key words: Economic Growth, Development Economics, GDP per capita, China, Western Expansion, Institutions

JELCODES: N10 (Growth and Fluctuations General), O10 (Economic Development, Technological Change and Growth: General).

# 1 Introduction

Angus Maddison has been a source of great inspiration to his many pupils, colleagues and friends. There have already been three special conferences organised in his honour, one to mark his 65th birthday (Szirmai, Van Ark and Pilat, 1993) and two related conferences in Australia and Groningen to mark his 80th birthday, for which papers will be published shortly (Van Ark and Rao, forthcoming). Angus Maddison continued to be so active as a researcher, thinker and academic that his death on 24 April 2010 caught us unawares, even though we objectively should have known that his health was failing. In November 2010, a memorial conference was organised in Amsterdam by the Institute of Social History. The purpose of this conference was to reflect on Maddison's academic contributions, the lessons we can derive from his work and to discuss how to continue research in the quantitative tradition that he served so passionately. This paper focuses on his contributions to development economics.

Angus Maddison did not think of himself as a development economist, though he worked as such in the first part of his career. He was a quantitatively oriented economic historian, interested in measuring and analyzing long-run patterns of growth, catch up and stagnation in both advanced and developing countries. He was far removed from the trendy world of development with its fads, buzz words, acronyms, bouts of unrealistic enthusiasm and sudden disillusionments. His was not the world of millennium development goals, the end of poverty, inclusive growth, pro-poor development, micro-credit, appropriate technology, good governance, the Washington consensus, self-reliant development, poverty labs or sustainable development. Perhaps his most valuable contribution to development economics was his forceful scepticism about the ideological posturing and wishful thinking characteristic of so much of the field.

His alternative was the unrelenting search for empirical evidence and the quantification of long-run trends in economic development. We learn from him that a long-run comparative analysis is the key to understanding economic growth in general as well as the development prospects of developing countries today. Though he may not fit the mould of a conventional development

economist, whatever that may be, he has made major contributions to our understanding of economic development.

In this paper, I will focus on the following issues and debates: 1. Quantification in development economics, proximate and ultimate sources of growth and development; the advantages of economic backwardness; 2. Levels of GDP per capita in the middle of the eighteenth century. 3. Maddison versus the Malthusians; 4. Measurement of Chinese economic performance. 5. The impact of Western expansion and colonisation on the development prospects of the non-Western world; 6. Institutions and economic development.

## 2 Quantification and the Study of Development

Of all of Maddison's works, *Economic progress and policy* (1970) is the book which focuses most explicitly on development and developing countries. In this book Maddison applies the comparative quantitative methods he had developed in his books *Economic growth in the West* (1964) and Economic *Growth in Japan and the USSR* (1969) to a sample of 22 developing countries. The book contains 80 tables focusing on growth of output, productivity, educational qualifications, labour input, investment in fixed assets, exports, imports and external finance, covering the period 1950-65, but going back to 1870 for some indicators. The period 1950-1965 was a period of high hopes for developing countries. Growth rates were higher than before and decolonisation seemed to offer new opportunities. These data are analysed in a growth accounting framework, with some special features, namely an assessment of the role of policies and foreign aid.

Maddison explicitly asks the question what proportion of the rapid growth of per capita incomes in developing countries between 1950 and 1965 (5.5% per annum) was due to autonomous forces and what proportion was due to improved domestic policies and or to the impact of foreign aid. He assumes that in the beneficial international environment of the fifties autonomous forces would have resulted in around 3.5 % growth of per capita income. These autonomous forces included increasing labour supply, autonomous domestic investment and the inflow of foreign finance (including aid flows). However, Maddison took the position that developing countries

were resource constrained and that it was the role of policy to contribute to resource mobilisation. He argued that improved policies and the availability of external finance, two thirds of which consisted of government to government aid, helped increase the growth of factor inputs and thus accelerated the growth rate by two percentage points on average.[2] There was also some contribution of policy to efficiency improvement, but these effects were modest at best In several countries the contribution of policy was even negative, in particular in Argentina.

It is interesting to note that Maddison is rather positive about the role of external aid flows in growth. Through an increased inflow of foreign finance, aid contributes to investment. But he does see aid as less important than domestic policy efforts: "On average, aid has been equal to 1.5 per cent of the income of the developing countries and less than 0.5 per cent of the income of the developed world. For most developing countries it has been less important in the acceleration of their post-war growth than improvements in their own policies. The biggest beneficiaries have been Greece, Israel, South Korea and Taiwan." (Maddison, 1970, p. 274).

Maddison explicitly dismisses the importance of absorptive capacity and argues that aid flows have contributed to increased saving and investment and to acceleration of growth. This would change in later years, when Maddison became more cynical about the development establishment and the collusion between Western self-interest and developing country corruption. He came to criticise two gap models à la Chenery and Strout, which focused on the 'financial requirements' of developing countries. But, to the best of my knowledge, he did not explicitly analyse the shortcomings of aid in his later publications. Rather, he tended to focus more on the growth of inputs, improved efficiency, changes in the international order and the role and quality of domestic policies. In his view – with which I concur – aid flows are at best a minor and marginal factor in long-run economic development.

[2] There is some ambiguity about whether the two percent additional growth includes the effect of foreign aid. Maddison writes that the two per cent are due to domestic policies for increased resource mobilisation. This suggests that foreign aid is part of the autonomous forces making for growth in the form of the inflow of foreign finance (see Maddison, 1970 p. 269).

*Economic Progress and Policy* also contains an early discussion of the role of institutional change. Maddison is somewhat ambiguous about this. On the one had he argues (p. 89) that developing countries are late starters, primarily due to institutional differences between their societies and those of Western Europe. However – in a discussion surprising similar to current debates – he argues that wholesale institutional reform is not a 'pre-condition' for accelerated growth (as opposed to authors such as Everett Hagen and Gunnar Myrdal). This is not to say that there are no institutional obstacles to growth, but growth can take place even when institutional reform is limited (see also Rodrik, 2003, 2006).

Along with *Economic Growth in the West, Economic Progress and Policy* provides an analytic framework for the study of development experiences, which Maddison built upon during the rest of his academic career. It has a number of common elements:

1. quantification of economic growth in the framework of national accounts. Economic policy making in developing countries is simply not possible if we do not have the means to monitor economic progress. There have been substantial advances in the theory and practice of measurement of growth, but data for the poorest countries are still shaky and much still remains to be done.
2. The distinction between proximate sources of growth (such as increased supply of labour and capital, improved quality of labour and physical capital, structural change and total factor productivity) and more ultimate sources of growth such as policy, changes in the international order or institutions. The proximate sources are tackled in a systematic growth accounting framework. The more qualitative and historical discussion of ultimate causality focuses on the deeper forces which underlie proximate causality. This framework has most explicitly been laid out in his 1987 article on growth accounting in the *Journal of Economic Literature* and his article on proximate and ultimate sources of growth in the Scandinavian Economic History Review (1988).
3. The importance of technological backwardness. Following Gerschenkron, Abramovitz and Veblen, Maddison has always emphasised the potential provided by operating at a distance to the technological frontier (e.g. Maddison, 1987). The opportunity of absorbing advanced technology without bearing the risks of its development is one of the factors explaining the

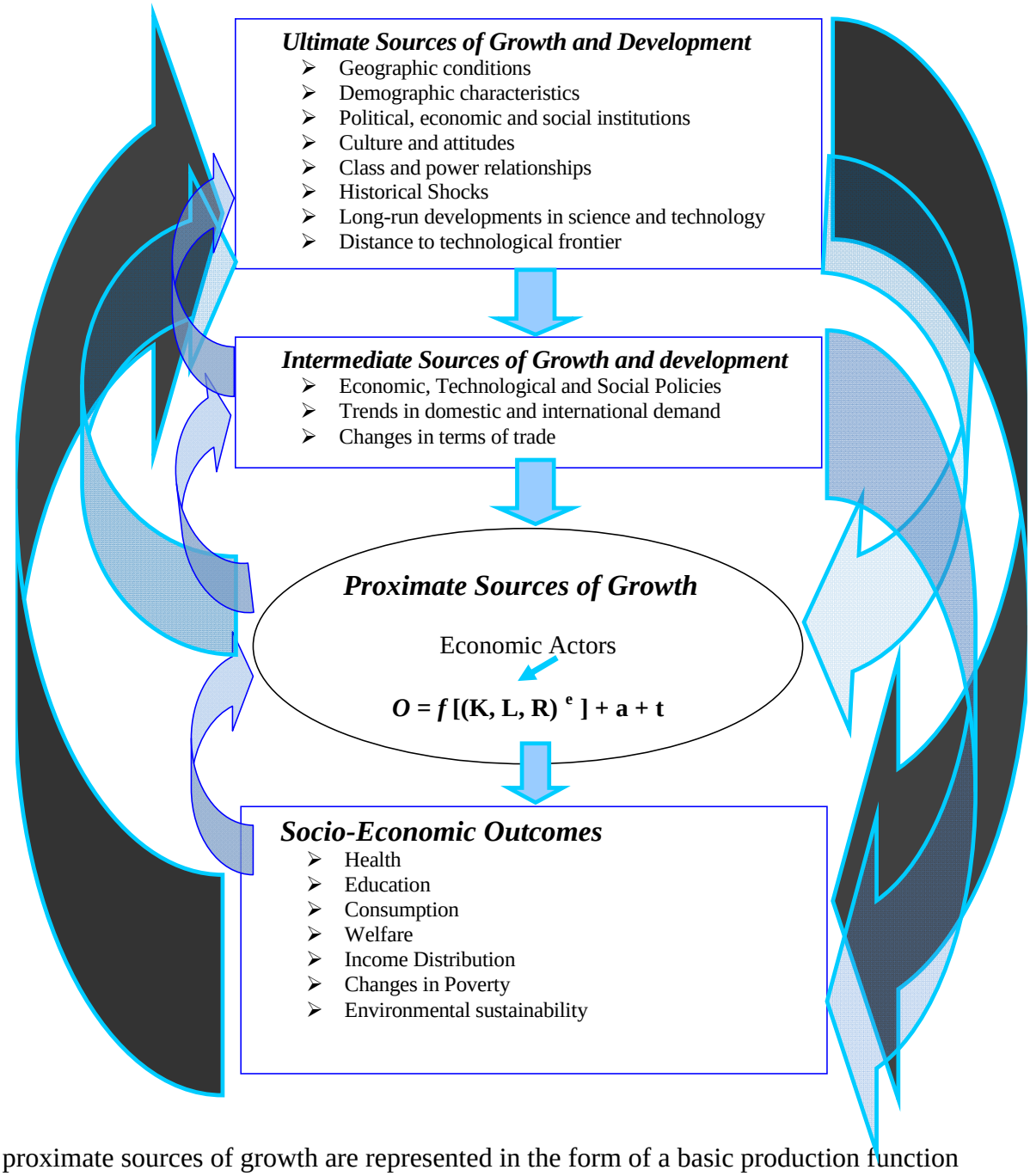
very rapid growth occurring in catch up countries in the twentieth century. This notion has become one of the pillars of modern development theory.

Inspired by Maddison's framework of proximate and ultimate causality, I have done some further work on the development of this framework. The framework is summarised in figure 1.[3]

[3] An earlier version of this figure was presented at a conference held in Groningen at the occasion of Maddison's eightieth birthday (Szirmai, 2011).

**Figure 1:**

**Proximate, intermediate and ultimate sources of growth and development**




The proximate sources of growth are represented in the form of a basic production function relating output to the primary factors of production. The exponent $^{e}$ refers to the efficiency which with the primary factors are used to transform intermediate inputs into final goods and services.

The concept of efficiency as used here refers to everything that increases output per unit of primary input. It includes economies of scale, efficient allocation of the factors of production within sectors (*appropriate choice of technology*), efficient allocation between less productive and more productive economic sectors (*structural change*), reallocation of resources towards more dynamic sectors (*structural change*), efficient allocation between countries (*specialisation, static and dynamic comparative advantage*), utilisation of capacity and, last but not least, disembodied technological change. *A* denotes net income from capital investments and labour abroad (net factor income) and *P* refers to colonial plunder and expropriation (negative) or voluntary transfers and development aid (positive). In all his publications, Maddison has tried to quantify and measure these proximate sources of growth in a systematic fashion.

It is long known (Abramovitz, 1989; Nelson, 1996; Nelson and Pack, 1999; Rodrik, 2003) that one should be careful in giving the sources of growth equation a too strong causal interpretation. As Rodrik notes, for instance, capital accumulation and efficiency in the use of resources are themselves *endogenous*. Causality may well run backwards from growth to accumulation and productivity (Rodrik, 2003, p. 4), creating virtuous cycles of growth or vicious cycles of stagnation. These circular relationships are therefore indicated by the feedback arrows in the figure. Nevertheless, the proximate sources of growth formulation is indispensable for a systematic empirical examination of growth and development.

A novel element in figure 1 is that the proximate sources of growth now also include the behaviour of the economic actors that are responsible for the changes in the immediate sources of growth, such as saving and capital accumulation, investment in human capital, investment in research and development, efficiency improvements, inventions and innovations, and entering new economic sectors. Economic actors provide the link between the macro-economic analysis of the production function and the burgeoning micro-economic and sociological literature on firm-level analysis, household surveys, entrepreneurship and innovation studies (Szirmai, Naudé and Goedhuys, 2011). It also allows us to examine the relationships between proximate sources of growth such as capital accumulation, investment in human capital and technological advance and ultimate sources such as culture and institutions. Culture and institutions provide the incentives

and mindsets for saving, investment and entrepreneurial behaviour by economic actors, which can result in accumulation of capital or technological advance. They also affect the coordination of the behaviour of the economic actors in markets and hierarchies.

*Intermediate sources of growth and development* refer to three types of factors: 1. trends in domestic and international demand 2. Trends in the terms of trade and 3. economic policies, social policies and technology policies. Adding demand and terms of trade as intermediate sources of growth is an attempt to respond to the criticism that the sources of growth framework is an exclusively supply side approach. Taking patterns of demand into account is important for the understanding of the path-dependent nature of processes of economic development. Thus when world demand or domestic demand are growing rapidly, when a country's market shares are expanding, this will motivate economic actors to accumulate human and physical capital which results in further growth and competitiveness. In the same fashion, changes in the terms of trade provide powerful incentives for the economic actors.

Interpreting national and international socio-economic policies as intermediate factors emphasises that policy is in turn influenced and constrained by more ultimate factors such as economic interests and power structures. Almost all of Maddison's publications pay attention to changes in national and international policies and how they are influenced by power structures and interest groups. These relationships are increasingly being rediscovered in recent research in political economy, which sees policy itself as an endogenous variable, explained by more ultimate factors such as the balance of power between different classes or between elites and the mass of the population (e.g. Acemoglu et al. 2001; Acemoglu and Robinson, 2006, Shleifer, 1993, Shleifer et al. 2004, North et al. 2009. For a survey see Bluhm and Szirmai, 2011). In the work of Maddison, a clear example of the endogeneity of policy is his discussion of the policy cycle of public expenditures in Latin America, with a predictable increase in public spending in pre-election periods (Maddison et al, 1992).

Underlying both the proximate and intermediate sources, there are the more ultimate sources of growth and development. These include

1. Geographic location, climate and natural resources. Geographic location and climate determine the challenges facing a country and its people: rich versus poor soils, landlocked versus seaboard location, extreme versus moderate climate, availability of natural resources.
2. Demographic conditions and trends. These include the size of population, population density, the rate of population growth and the age structure of the population.
3. The history of political centralisation, state formation and external domination
4. The dynamics of class relationships and the balance of power between elites and the mass of the population.
5. Evolution of culturally and religiously sanctioned values and attitudes affecting economic behaviour (attitudes towards work and effort, saving and risk, entrepreneurship, science, technology and innovation, rent seeking).
6. Evolution of institutions which provide incentives for economic behaviour. These include
    a. Political institutions for conflict management and the maintenance of law and order.
    b. Economic institutions such as private property rights, public ownership of the means of production, intellectual property rights, joint stock companies, central planning institutions, banking institutions and other institutions for financial intermediation, and inheritance institutions affecting the intergenerational transfer of wealth
    c. Labour market institutions
    d. Institutions regulating social protection
7. Developments in the international economic order such as changing international trade regimes or migration flows.
8. Long-run developments in science and technology which determine the limits to and possibilities of technological advance in economic production
9. The distance to the technological frontier, which determines the catch-up potential of a country.
10. Absorptive capacities and the evolution of technological and social capabilities. These determine the extent to which a country and its firms can benefit from international knowledge flows.

The final element of the framework consists of socio-economic outcomes. Socio-economic outcomes include health, education, literacy, levels of consumption, the number of people living

in poverty, the distribution of income and resources and environmental sustainability. Though growth is the central focus of his research, Maddison has made a major effort to quantify socio-economic outcomes in a rigorous fashion, with a special emphasis on education, life expectancy, standards of living and equity.

Outcomes are what ultimately matter in development. If a country has rapid growth but no improvement in the living conditions of its people, we cannot speak of development. However, in contrast to much of modern development discourse, the framework of proximate and ultimate causality does emphasise the importance of increases in productive capacity.[4] Sustained improvements in socio-economic outcomes are not possible without long-run increases in productive capacity, as indicated by growth in GDP per capita. Economic growth is one of the essential preconditions for improvements in social outcomes. There can be no expansion of a health care system or an educational system or a system of social protection without a sustained increase in productive capacity. If development economics forgets about growth, it becomes irrelevant.

But, on the other hand the degree to which productive capacity is transformed into desired social outcomes depends very much on the nature of social and economic policy (intermediate causality) and the incentives provided by the institutional framework and initial levels of socio-economic inequality (ultimate causality). In figure 1, socio-economic outcomes are not only influenced by an arrow running directly from the proximate sources of growth to outcomes, but also by the arrows connecting ultimate sources of growth of development and intermediate policies to socio-economic outcomes.

The use of the terms ultimate, intermediate and proximate is not meant to imply a linear model of causality. Causality is circular at all levels, as indicated by the feedback arrows in figure 1. For instance, improved health and education (social outcomes) result in higher quality of labour inputs (proximate causality), but also in the longer run in changes in absorptive capacity (ultimate

[4] A recent example of anti-growth rhetoric is the report of the Sarkozy commsion on economic performance and progress (Stiglitz, Sen and, Fitoussi, 2009).

causality). Changes in the distribution of income and wealth (social outcomes) change the incentives for economic actors in the growth equation. Growth of per capita incomes affects demographic and epidemiological transitions. In the long run even cultural values and institutions are shaped and reshaped in the course of economic development.

It is important to emphasise that figure 1 is a framework for analysis of development rather than a theory of development as such. In different historical periods, different configurations of factors operate and there is a great variety of development paths. But one can learn much from a systematic analysis of the factors that play a role in development and their interactions. At the minimum one can say that a common element of successful development involves positive feedback loops where initial success creates conditions for further success and rapid economic growth removes obstacles to further growth and development in a virtuous cycle. It is also clear that no growth and development can be realised without increases in the proximate sources of growth in the production function.

# 3 Levels of GDP per capita in the eighteenth century

One of the important debates in economic development refers to differences in levels of per capita income in the mid-eighteenth century. This debate has important implications for the theory of development. On the one hand stand the scholars who argue that levels of per capita income in developing countries and Western countries were very similar around 1750. The subsequent divergence in income levels is then interpreted as the result of imperialist exploitation of the third world by the Western countries in the nineteenth century. Other scholars argue that Western countries already had much higher levels of income before the period of modern economic growth and the long run divergence between the West and the rest can be explained by internal characteristics and conditions.

The two grand of questions of development are: why did the West get rich and why did the non-Western world stay poor (Szirmai, 2005). If one concludes that levels of income per capita around 1750 were similar and that the great divergence occurred after that, then the answer to

both questions is provided by exploitation. Growth and industrialisation in the Western economies since the eighteenth century was fuelled by the exploitation of colonies and non-colonised developing countries. Stagnation and the lack of industrialisation in the developing world were caused by colonial exploitation, extraction of surpluses, colonial drain and deliberate policies to hinder industrialisation. Proponents of this perspective – though of various hues - include Bairoch (1975), Andre Gunder Frank, Batou, Samir Amin, Gregory Clark, Raoul Prebisch, Hans Singer, Kenneth Pomeranz (2000) and to a lesser extent Findlay and O'Rourke (2007). On the other side of the divide stand authors such as David Landes (1998), Eric Jones (1988), Stephen Broadberry (e.g. Broadberry et al. 2010) and Angus Maddison.

Maddison has spent his whole life quantifying levels of GDP per capita and rates of growth. He presents powerful evidence that the Western countries had forged ahead long before the industrial revolution (a term with which Maddison felt increasingly uneasy). According to Maddison, European countries had already overtaken China in the fourteenth century. In 1700, average per capita income in Western Europe was 1.7 times the average world income, 1.8 times the average income level in Asia, and 1.9 times the income level of Brazil and Mexico. By 1820, average per capita income in Western Europe was 1.9 times the world average (Maddison 2001, 2003, 2010). Thus, the acceleration of economic growth in the West after 1820 was preceded by centuries of pre-capitalist accumulation and internal institutional change (Maddison, 2001/2007). Though there is little doubt that there was extensive exploitation of the non-western World, the rise of the Western economies cannot be explained primarily by exploitation.

Given the different patterns of pre-modern economic development, stagnation in the non-western world can also not be explained by external exploitation alone, as has been suggested in the Marxist tradition (e.g. Baran, 1957). If Maddison is correct that the West had forged ahead long before the imperialist age, this also means that the explanations for the absence of an economic breakthrough in the non-western world are in large part internal as well and are institutional in nature. This issue will be discussed in the last section of this paper.

# 4 Maddison versus the Malthusians

The debate about eighteenth century levels of income per capita is related to a second debate in both development economics and growth theory, namely that between Malthusians and non-Malthusians. One of the most extreme Malthusians is economic historian Gregory Clark (2007), who staunchly defends the rather implausible hypothesis that hunter gatherers in the stone age had about the same standards of living as Europeans prior to the industrial revolution. The Malthusian reasoning is that any increase in output will result in an acceleration of population growth which will push per capita incomes down to a minimum level. Only in the industrial revolution was there a breakthrough which resulted in sustained increases in per capita incomes. Other representatives of this school of thought include Oded Galor (e.g. Galor and Weil, 2000) and O'Rourke and Findlay (2007), who argue that per capita income growth was a flat line from the stone ages to around 1750.

There is also a strong streak of Malthusianism running through development economics. Since the 1980s, the followers of the club of Rome have argued that resources are running out and that population growth will make economic growth in the developing world impossible. In the early work of Nelson (1956), the Malthusian influence surfaces in the model of the neo-Malthusian trap, which argues that developing countries are caught in a vicious circle of stagnation; any growth of per capita incomes results in population growth. This results in stagnating levels of per capita income, which in turn translate into low levels of savings and investment. Paul Ehrlich has argued for the past 30 years – in face of all empirical evidence – that the globe will be unable to feed itself.

Like the Marxian prediction that revolutions would break out in the advanced capitalist societies, Malthusian predictions have so far invariably been falsified, primarily because they fail to take technological progress into account (Boserup 1981; Simon, 1982; Lomborg, 2001).There is no evidence that population growth is incompatible with growth of GDP per capita as such. Many of the economically successful countries have experienced very rapid population growth. Admittedly, the poorest African economies do seem caught in a Malthusian trap of low growth and high growth of population. But there is nothing inevitable about this. Since the 1930s global food production has outpaced accelerating population growth (Szirmai, 1994, 2005; Lomborg

2001; Pinstrup Andersen, 2007), price increases in energy have called forth new supplies of energy, land degradation can be combated with technology and raw materials show no sign of running out.

Maddison stands squarely in the anti-Malthusian camp (Maddison, 2008), and has contributed to the discussion in two ways. His first contribution is to show that even in countries where incomes per capita are stagnant, technological advance makes it possible to cope with very large increases in population (Maddison, 2001). Reynolds (1986) referred to this as extensive growth. Extensive growth runs counter to classical Malthusianism, which predicts that famine and disease will stabilise population size, which is obviously incorrect in the long run. Though the rate of population growth is presently much higher than in the past, world population has been gradually increasing since 10,000 BC. The second insight is that there have been gradual increases in productive capacity over very long periods (intensive growth), in particular in the Western world. Though there is no doubt that economic growth accelerated after 1820, the Malthusian view of centuries of stagnation in the Western countries is profoundly unhistorical.

There are nevertheless a number of important issues for which the Malthusian perspective is relevant today. These include $CO^2$ emissions, global warming and climate change and the acceleration of the loss of biodiversity. During most of his life, Maddison has not addressed environmental issues. But the final chapter his 2007 book on the *Contours of the World Economy* focuses on climate change. He reviews existing reports and studies and comes to the conclusion that the threat of global warming is not exaggerated and that the climate pessimists do have a strong case (see also Maddison, 2005).[5] Coming from a confirmed anti-Malthusian, this is a notable conclusion, with which I fully concur. The evidence of global warming now seems incontrovertible. It is also becoming clear that such climate change has very negative consequences for the economic prospects of developing countries (WDR 2010).

[5] "In spite of scepticism about the higher IPCC scenarios for the twenty first century and the doomsday outlook beyond that point, it would be a mistake to dismiss the likelihood and implications of a milder degree of global warming." (Maddison, 2005: 366)

Anti-Malthusians may have to rethink some of their positions. There is no reason why technological advance cannot solve the problems of food production or shortages of energy, minerals and raw materials, as has happened time and time again in the past. But the global climate does seem to be a limited resource. Of course, by now the first anti-Malthusian publications have appeared which suggest that human societies will be able to adapt to climate change (Kahn, 2010; Kohn, 2010). But the changes may be so radical and even cataclysmic that this may well be far too optimistic.

# 5 Measuring Chinese Economic Performance

In his study on Chinese economic performance in the long run (Maddison, 1998). Maddison has applied his quantitative approach to the economic development of China. His estimates have resulted in some important new insights with regard to Chinese economic performance in comparative perspective.

The first insight is that in terms of GDP per capita, Western Europe had already overtaken China by the middle of the fourteenth century. Until recently the standard assumption was that China was the global productivity leader till around the middle of the fifteenth century, when it suddenly abandoned both external exploration of the world and empirical examination of and experimentation with the natural environment (e.g. Elvin, 1973). Maddison dates the onset of relative economic stagnation in China hundred years earlier.

The sudden stagnation of the most technological advanced economy of the world is still one of the major puzzles of economic history (and development economics). Explanations range from cultural change and a turn to mysticism (Elvin, 1973), the high-level equilibrium trap based on high man-land ratios (Elvin, 1973), bureaucratic obstacles to innovation (Needham, 1969), the incentive structure of the Mandarin system of education which precluded the shift to modern experiment based science and technology (Lin, 1995) and shifts in the balance of power between inward-looking Mandarins and the outward-looking eunuch admirals (Wallerstein, 1974). However, the timing of the onset of stagnation in the first half of the fourteenth century calls attention to a recent explanation provided by Findlay and O'Rourke (2007), namely the shock of

the conquest of China by foreign invaders, the Mongols, a technologically backward people who subjugated the technologically progressive Sung empire, superimposed themselves on Chinese civilisation and established the Yuan dynasty (1279-1368). This explanation seems quite plausible, but has so far not received that much attention.

Maddison's own preferred explanation is not that there were unfavourable circumstances in China, but rather that the explanation lies in Western exceptionalism (Maddison, 1998, p. 14). This argument is consistent with the discussion in section 3 of this paper, focusing on centuries of pre-capitalist accumulation and build up in the Western economies.

The second insight is that growth rates in modern China since 1949 have generally been exaggerated, while the levels of output have been underestimated. There is a long debate on economic growth in post-war China, where Maddison and Wu (2008) have taken the position that the rate of growth in China is actually 2-3 percentage points lower than that found in official estimates. At the same time, basing himself on a version of PPPs of Ren and Chen (1994), Maddison has put the level of real Chinese GDP much higher than in other estimates. Also, Maddison has made upward revisions of the size of the service sector, which was inadequately measured in the net material product system. The combination of slower growth and higher levels of output provides a more realistic picture of Chinese economic development than that provided by official statistics.

Maddison's estimates have been subjected to severe criticism by Karsten Holz, in particular with regard to the assumption of zero productivity growth in services (Holz, 2006). But, by and large the Maddison estimates have held up rather well. The 2004 revision of Chinese national accounts vindicated his upward revision of service output and his proposition that Chinese growth rates are biased upward is also generally accepted.

The latest round of ICP estimates based on the 2005 ICP have given a new impetus to the measurement of Chinese comparative performance. Based on new measurement methods, the new ICP estimates have resulted in a 30-40 percent downward revision of the real level of Chinese national income. Maddison has stood almost alone in his complete rejection of these

estimates. Most other observers believed that the careful new methods of the latest ICP round gave results that had to be accepted. Maddison disagreed. His main argument is the Kuznets type of argument that if current growth rates are applied to the new level estimates, the outcome for China in 1950 is simply beyond belief. Not does this put China at a much lower level than India in 1950, but also it is far below any reasonable subsistence level. In the end, I believe the academic community is likely to come round to Maddison's point of view. In any event, his work on the quantification of Chinese economic performance is a valuable contribution to the improvement of measuring of the economic performance of the most dynamic developing country in the international economic order since 1973.

Maddison fails to address one of the greatest puzzles of them all, namely how the Maoist regime could have been so successful in spite of its homicidal tendencies, in spite of the negative impacts of the truly catastrophic great leap forward in 1958-60 and the vast scale of destruction of human capital in the ten years of the cultural revolution between 1966-76. Maddison is conscious of the puzzle "Self inflicted wounds brought the economic and political system close to collapse during the Great Leap Forward (1958-60) and again in the Cultural Revolution when education and the political system were deeply shaken". "Nevertheless", he simply concludes: "economic performance was a great improvement over the past (Maddison, 1998, p. 55).

Maddison mentions the imposition of internal order after centuries of weak central rule, the elimination of external domination and the successful massive Stalinist style mobilisation of resources for industrialisation. With all its weaknesses, otherwise than in the case of the Stalinist Soviet Union, the Maoist period in China seems to have laid the foundations of the successful market-oriented reforms of the post-1978 period after centuries of economic stagnation. But explaining the success of the Maoist period is an interesting area for further research.

# 6 The West and the Rest: The impact of Western Expansion on the development prospects of developing countries

The fact that in Maddison's interpretation Western Economic Growth was predominantly driven by internal accumulation and internal technological advance does not deny the important negative impacts of Western expansion in other parts of the world. These effects are amply documented in Maddison's publications, e.g. those about India (Maddison, 1971), Indonesia (Maddison, 1990a; Maddison and Prince, 1989), Brazil and Mexico (1992) and China (1998).

In the first place, Western expansion was a very violent process which involved extermination and decimation of original populations, subjugation and enslavement and forcible removal of populations through the Atlantic slave trade. In Latin America, European germs contributed to very substantial declines of population in Mexico. In the second place there was theft, looting and expropriation of economic surpluses, which reduced the capacity of the dominated region to invest in resource mobilisation. In the third case, there was the imposition of growth retarding institutions such as large landownership which continued to inhibit development long after the colonisers had departed.

Maddison has never written a systematic theoretical analysis of the impact of Western expansion on non-Western economic development, but his works do contain many references to this issue. One has to piece together the bits and pieces and nuggets of information, to arrive at a broader picture. In my reading, Maddison does not subscribe to radical views of the underdevelopment theorists, who explain poverty and stagnation in the third world as the direct consequence of exploitation by Western nations. There are a number of reasons for this.

First and most importantly, I point to his notion of western exceptionalism. In this perspective, stagnation and slow growth are not the things to be explained. They are the typical characteristics of pre-modern economic development. What needs to be explained is why some countries and regions succeed in escaping the poverty trap. Western development has some special characteristics, including a positive climate for scientific and technological development, appropriate property rights and intellectual property regimes, the lack of continental political centralisation, medium level population densities, the early development of independent cities and a commercial bourgeoisie and the advantages of technological backwardness relative to the Middle Eastern Arabic civilisations, which allowed for economic advance over longer periods of

time, versus the cyclical fluctuations characteristic of older economic developments (Goldstone, 2002). If stagnation is a rather normal state and growth and development the exception, stagnation is not the primarily result of external forces.

In the second place, besides negative effects of exploitation, there were positive effects of technology transfers and introduction of new techniques of production. In different parts of the world, colonial powers introduced new crops, new methods of cultivation such as plantations, mining techniques, new transport techniques and later a first exposure to industrial products and methods of production. Also, as Arthur Lewis (1978) has emphasised, there were positive impacts of the establishment of law and order in the nineteenth century.

In the third place, the impact of Western expansion has often been exaggerated. The western colonial presence in Africa was limited to some sixty to seventy years. Prior to the 19th century, Western influences in Asia were limited to coastal areas and Western enclaves coexisted with indigenous empires and rulers. In Latin America independence was achieved in the early 19th century, and domestic policies and practices play an important part in explaining economic developments since then.

In the fourth place – this point is related to the first – one has to try to imagine the counterfactual. What would have the prospects of economic development have been in the absence of Western penetration? Many of the pre-colonial societies were not especially dynamic and had not embarked on an endogenous path towards economic development. The disruptive impact of Western penetration may well have set in motion changes which opened prospects for later development.

In this respect Maddison's study of India and Pakistan (1971, 2001, 2007) provides some interesting insights. The British colonisers replaced the Mughal rulers, who ruled a large empire in India as descendants of the Turkic-Mongol invaders of the fifteenth century. The British inserted themselves into the Indian caste system, replacing the previous Islamic rulers from the mid-eighteenth century onwards. Maddison then goes on to provide a systematic comparison of the tax burdens of the Mughal empire and the British colonial regime and analyses the economic

impacts of these two systems. The Mughal tax system was able to squeeze a large surplus from a passive village society to finance an extravagant and economically non-productive life style of the elite. Villages were squeezed to close to subsistence levels and the incentives for economic development were negative. The income of the Mughal elite amounted to some 15% of national income around 1600. The Indian caste system allocated jobs on basis of heredity, rather than on basis of economic criteria. It provided a measure of stability (Lal, 1988), but was not economically dynamic. Maddison concludes that the Indian economy was characterised by long-term stagnation and negligible levels of productive investment. Per capita income in 1757 was lower than it had been in 1600.

The British elite was much smaller than the Mughal elite. It never amounted to more than 0.05 percent of Indian population and the tax burden was less oppressive. By the end of British rule British rule, the tax income of the elite amounted to some 6 % of national income and land taxes had been reduced to 1 per cent (Maddison 2001, p. 108). There were also modernizing impulses, but the main gain of the tax reduction went to the upper castes in the village economy. There were some improvements in agriculture and infrastructure, but per capita income continued to stagnate till 1857 after which it started to increase marginally.

There were negative effects of colonial rule on pre-colonial Indian manufacturing, which was largely destroyed by the British. The production of high quality textiles and other luxury products for the Mughal elites was eliminated and massive imports of cheap textiles from Britain in the nineteenth century had a negative impact on the prospects of Indian industrialisation. The colonial rulers refused to give tariff protection to Indian textile production till 1920 and gave preference to imports. Thus Britain created policy barriers to Indian industrialisation.

Nevertheless, the foundations of modern Indian manufacturing were laid from 1851 onwards. Maddison concludes that British colonialism created the conditions for the emergence of a modernizing elite in India. But the prospects of economic development of India would have been better, if decolonisation had taken place eighties earlier.

*Colonial drain: Who were the worst, the Dutch or the British?*

One area where Maddison has made an explicit attempt to assess the impact of Western expansion is through the careful quantification of the colonial drain (Maddison, 1990a, 1990b, 2001; 2007; Maddison and Prince, 1989). Colonial drain is the flow of income from colonies to motherland based on taxation, forced delivery of crops, monopoly income from transport, remittance of profits and transfers of currency reserves. Given that currency reserves were transferred to the central banks of the colonial powers, the net drain equals the trade surplus of the colony.

In a comparison of British and Dutch colonial experience, Maddison concludes that the Dutch exploited Indonesia much more heavily than the British did India. Between 1868 and 1930, the colonial drain from India hovered around one percent. In the same period the colonial drain from Indonesia to the Netherlands increased from 7.6 to 10.3 percent of net domestic product. In addition, the size of the British civil administration in British India was very much smaller than that in Indonesia. As the colonial administration is financed from colonial revenues, this is another indication that the colonial burden in Indonesia was an exceptionally heavy one. This comparison, however, disregards the early period of British colonisation, when the British East India company literally plundered Bengal between 1757 and 1782 and the colonial burden must have been much higher than later.

I am not able to summarise all of Maddison's analysis of the impact of Western expansion on the non-Western world in the context of a brief paper. However, the discussion of the British colonial impact in India provides a good example of the approach, namely a dispassionate, quantitative and non-ideological analysis of positive and negative impacts and an attempt to construct a counterfactual of what might have happened in the absence of Western expansion.

# 7 Institutions and Economic Development

## 7.1 *Introduction*

This brings me to my final and possibly most important topic: the impact of institutions on economic development. During the past ten years, this has become one of the most important issues in modern development economics. When the international financial institutions such as the World Bank and the IMF discovered that radical market reforms and structural adjustment were often having disappointing and even negative effects in Russia, Latin American and Africa, one response was to seek the explanation in weak institutions and the quality of governance (Rodrik, 2006). Good governance and institutional reform become the new buzzwords. A large literature has emerged focusing on the institutional determinants of economic development (e.g. Acemoglu et al., 2001; North et al., 2009, Burnside and Dollar, 2000; Knack and Kiefer, 1997, Bluhm and Szirmai, 2011). However, the relationship between institutional characteristics and growth is not straightforward. Otherwise than originally expected, there is no significant correlation between short-run economic growth rates and institutional characteristics in cross-section regression studies. There is however a strong relationship between levels of per capita income and institutional characteristics, which suggests that it is in the very long run that institutional characteristics will have an impact (De Crombrugghe et al, 2010).

Long before institutions were rediscovered by development economics, Maddison extensively discussed the impact of institutions on economic growth and development in almost all of his publications on Latin America, Indonesia, India, Japan, Russia, China and the Western economies. What is distinctive about Maddison's approach to institutions is that he discusses them within the framework of proximate and ultimate causality (see section 2). The proximate sources of growth lend themselves to systematic quantification: labour input, labour efficiency and hours worked; education and human capital; savings, investment and capital accumulation; structural change; technological change and advances in total factor productivity. Institutional change belongs to the realm of more ultimate causality. But Maddison links his discussion of institutions to the quantified proximate sources. Thus Japanese institutional arrangements are analysed in order to explain the exceptionally high savings rate in Japan, which contributed to accelerated growth. The experience of hundreds of years of labour in the context of intensive rice farming in East Asia is used to explain the disciplined nature of labour supply, which fuelled labour intensive industrialisation. Family and inheritance institutions are discussed as an

explanation of patterns of capital accumulation. Below I highlight a few of the institutional issues he has discussed..

## 7.2 *Inequality as an obstacle to economic development: The Iberian institutional legacy in Latin America*

The Iberian legacy in Latin America consists of high degree of institutionalised inequality of landownership wealth, income and status, which in many ways acted as an obstacle to economic development (Maddison et al., 1992). The colonial system promoted absentee landownership and exploitative taxation by colonial authorities. It created an upper class with sumptuary life style and an aristocratic world view. In the colonial economy, rents from abundant natural resources were cornered by the state and by large landlords from Portugal and Spain.

Absentee landlords had little incentive to improve the productivity of land and government policy after independence became heavily skewed in favour of landed interests and comprador elites involved in foreign trade of primary products. There was little peasant agriculture. The labour force in Brazil originally consisted mainly of slaves. This changed when immigrants from Europe and Japan came into Japan and become sharecroppers or small or medium scale cultivators. But, inequality remained high. There were and are to the present day wide disparities in income wealth, landholding, education and economic opportunity, which are closely associated with ethnicity.

Inequality contributes negatively to development in many ways: the mass of the poor population has insufficient economic opportunities and insufficient incentives, the elites traditionally had luxurious consumptive life styles which were not very entrepreneurial. Inequality also means that domestic demand is limited. Inequality of landholdings contributed to limited productivity improvements in agriculture.

## 7.3 *Land reform*

An interesting example of institutional analysis is Maddison's discussion of Mexican land reform (Maddison et al, 1992, chapter 6). Land reform started in 1915 and gained momentum in the

1930's. In development economics redistribution of land is often seen as a condition for healthy agricultural development as tiny plots have suboptimal productivity, while the largest landholdings are also less productive then middle-sized ones. Well-known instances of large scale reforms include those of revolutionary China and post-war Taiwan and South Korea.

Mexico prides itself in being the first developing country to introduce radical land reform. In this reform peonage was replaced by collective landholding at village (*ejido*) level. The villager received rights to cultivation while the village had collective ownership Maddison presents quantitative data on the extent of this land reform and shows that by 1970 two thirds of all farming households were ejidatorios and accounted for 60 per cent of total landholding in the centre and south of Mexico.

By and large the land reforms have been quite successful in the earlier years. Agricultural production between 1940 and 1970 grew at five per cent per year, but after 1970 growth rates started to slow down. Once expansion of cultivated land area – an important source of agricultural growth – ran out of steam, it turned out that productivity on the collectively farmed land was lower than on privately held land. Ejidatorios, being virtually tenants, invested little in their lands and mechanisation was hindered because plots remained relatively small. Thus, an institutional reform, which initially contributed to high growth of agricultural, later turned into an obstacle of further agricultural development. Maddison concluded that it had turned into an institution that maintained shared poverty (Maddison et al. 1982, p. 176). The changing impact of the same institutional arrangements is one of the reasons why regression studies find it so difficult to capture the role of institutions in an unambiguous fashion.

## 7.4 *The developmental autocracy*

One of the factors surfacing in the modern literature on economic development is that of 'developmental drive'. It is interesting to note that developmental autocracies or even dictatorships have played an important role in economic development since the nineteenth century. Here, I do not want to enter into the ongoing debate on the relative importance of

democracy or dictatorship for economic development. I do note that developmental or modernizing elites with sufficient control over economy and society have played a key role in mobilizing resources for accelerated development. What distinguishes these elites from elites in predatory states is a strong developmental drive and economic orientation, an urge not only to extract resources from a country for conspicuous consumption or clientalism, but to promote growth and move a country upward in the international productivity and technology race.

I am hesitant to impute this view to Maddison, as he has not written explicitly about this. But, the role of such developmental elites does come to the fore in his discussions of the economic policies of Getulio Vargas and Juscelino Kubitschek in Brazil, Mao and his successors in China, Suharto in Indonesia, the Meiji reformers in Japan (Maddison 1969), and the institutional revolutionary party in Mexico.

## 7.5 *The caste system in India*

In class structure and economic growth (Maddison 1971, also Maddison, 1970) analyses the economic impacts of the Indian caste structure. The caste structure determines patterns of social interaction and assigns members of different castes to hereditary occupations. It prevented individual social mobility and efficient allocation of labour and talent. The upper castes were not directly involved in economic activity, but collected land taxes from peasants. This provided little incentives for increases in productivity both for the collectors and the producers. The caste determined division of labour tasks, prevented people from switching jobs and learning new skills. The caste system is a special case of an extremely rigid structure of social inequality. But it also exemplifies the generally negative effect of institutionalised inequality which reduces incentives for innovative and productive behaviour both at the top and the bottom of the social hierarchy.

## 7.6 *Institutions promoting technological change and economic advance in Western Europe*

In his discussion of Western economic development, Maddison pays special attention to technological advance and the institutional and cultural underpinnings of technological advance. In his “Dynamic Forces of Capitalist Development (1991), he writes “Capitalist Development

after 1820 was characterised by processes of accumulation, innovation, diffusion of technology and personal enrichment which by previous historical experience, were unprecedented in scope. These features required societal, intellectual and institutional changes that had taken place over the preceding four centuries. These were complex and gradual, and most were not present in other parts of the world." (p. 52). The scientific revolution of the sixteenth century and seventeenth centuries involved a recognition of human capacity to transform the forces of nature through rational investigation and experiment. He sees non-discretionary systems that protected property rights as an important institutional condition for growth. The ending of feudal constraints on the free purchase and sale of property gave scope for successful entrepreneurship. Accountancy helped in making contracts enforceable. But Maddison does not take a clear stand on whether the rise of intellectual property rights as such was crucial for economic development, as argued by North and Thomas (1973).

Religious and political tolerance contributed to technological advance in North West Europe, while increasing intolerance smothered technological dynamism in Portugal and Spain. Technological advance was also promoted by the printing revolution, which had no counterpart except in China. Maddison argued that printing in the European context was more competitive. The international trade in books made it impossible to impose effective censorship.

In a broader context Maddison discusses the emergence of urban trading centres and institutional changes that fostered entrepreneurship and abrogated feudal constraints. He also mentions inheritance institutions that broke down loyalties to extended families and clans and promoted a familial orientation which was conducive to capital accumulation. Finally, he points to the growth of trustworthy financial institutions that contributed to the process of capital accumulation.

## 7.7 *Early formation of national identity*

One of the factors contributing to economic breakthrough is the early development of national identity and the emergence of stable national institutions (Maddison, 2001, 2007). One of the typical characteristics of European evolution is the early development of strong national states competing with each other and thereby being forced to invest in their technological advance and productive capacity. Maddison refers to this as benign fragmentation. This is contrasted with

Chinese history, where the centralised empire did not provide such an impetus (see also Szirmai, 2005). All cases of successful late development –Japan, China, Korea, Malaysia, Indonesia, India involved economic nationalism and the establishment of national identity.

This is one of the major factors which differentiate sub-Saharan African economic development from that of other regions. Here colonial penetration carved up the continent, with boundaries cutting through local traditions, cultures and ethnicity. In a region where primary political allegiances were to lineage, clan, tribe and village the resulting political entities had little legitimacy and national identity remained elusive. The weakness of national institutions contributed to the lack of accountability and the use of economically destructive patronage to maintain power. It reduced the positive effects of the inflow of aid and contributed to a vast parallel outflow of wealth through corruption.

As in the case of the impact of Western expansion, Maddison never developed a comprehensive theory about the role of institutions in economic development. He was somewhat allergic to sweeping generalisations and preferred to discuss institutions in a somewhat offhand manner on a country by country basis. His publications are full of interesting asides on institutions, but one has still to put together the bits and pieces. It would be an interesting and challenging avenue for future research to develop this line of thinking in more systematic fashion and try to develop a synthesis of his views on the institutional sources of growth.

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